

## Appendix A

### Conceptual Wetland Compensation Plan

Conceptual Wetland Compensation Plan for  
FAU Route 5822 Section 1-3  
Milan Beltway Extension  
(West Rock River Crossing)  
Rock Island County  
P92-096-84

Prepared by the  
Illinois Department of Transportation



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## I. Introduction

This report describes the Illinois Department of Transportation's (IDOT) plan to compensate for unavoidable wetland losses associated with construction of the Milan Beltway Extension. The IDOT District 2 proposes to construct 1.9 kilometers (km) of four-lane, access-controlled expressway between Airport Road in Milan and the John Deere Expressway in Rock Island and Moline. The expressway will be built on new alignment and approximately 33.4 hectares (ha) of right-of-way will be required. This project will include a four lane bridge over the Rock River. Interchanges are also proposed for Airport Road and Black Hawk Road/52 Avenue.

Wetlands within the project area were delineated May 1997 according to the 1987 Federal Manual for Identifying and Delineating Jurisdictional Wetlands. Wetlands under the jurisdiction of the United States Department of Agriculture were delineated by the Natural Resources Conservation Service (NRCS) according to the National Food Security Act Manual, third edition, amendment 2 (1996).

Permanent and temporary wetland impacts total 9.03 ha and 1.40 ha respectively. Table 1 below shows the compensation that will be required on-site and off-site per the rules to the Illinois Interagency Wetland Policy Act of 1989.

Table 1. Required wetland compensation for the Milan beltway extension (ha).

Wetland Type	Permanent impacts		Temporary impacts	
	On-site	Off-site	On-site	Off-site
Farmed	10.21	15.86	0.09	0.14
Forested	5.12	7.97	1.58	2.01
Scrub-shrub	5.05	8.08	0.18	0.27
Emergent	0.18	0.24	0.08	0.12
Total	20.56	32.15	1.93	2.52

## II. Goals and Objectives

The first goal of the wetland compensation is to replace filled wetlands with restored or created ones. The amount of replacement wetlands should exceed the amount filled. The replacement wetlands should be jurisdictional.

The second goal is that the replacement wetlands should emulate natural ones; that is, they should be dominated by native plants.

### III. Site Descriptions

The IDOT has located three potential wetland replacement sites, hereinafter referred to as the Milan, Rock Island and Green Rock sites. Guidelines prepared by the U.S. Environmental Protection Agency (1991) and the U.S. Army Corps of Engineers (1995) were used to select potential wetland compensation sites.

The Milan site is located in the northeast corner of the Milan Beltway-Airport Road interchange (NW/4, NE/4, Section 19, T.17N.-R.1W., Rock Island Co., IL). This site is approximately 8.1 ha in size and was acquired in fee-simple by the IDOT (Attachment 1).

The Rock Island site is located in the southeast corner of the Milan Beltway-Black Hawk Road/52 Avenue interchange (S/2, NE/4, Section 18, T.17N.-R.1W., Rock Island Co., IL). The majority of the site (approximately 2.7 ha) is being acquired by the IDOT because the new highway will leave these areas land locked (Attachment 1). Augustana college owns land adjacent to and south of the site. The college uses this land as a river research lab. Approximately 1.7 ha of Augustana College property, which is mostly farmed wetland, will be restored to floodplain forest by IDOT as part of the compensation site.

The Green Rock site is located approximately 13 km east of the project area and one 1.6 km southwest of Green Rock, IL (SW/4, NE/4; SE/4, NW/4; Section 16, T.17N.-R.1E., Henry Co., IL). The entire site is approximately 25.1 ha in size (Attachment 2). Adjacent to the west side of the site there is a 43-ha floodplain forest that is owned by the IDOT.

#### A. Wetlands

Within the Milan site, the National Wetlands Inventory (NWI) (Milan Quadrangle) shows no wetlands. The Natural Resources Conservation Service (NRCS) map depicts two farmed wetlands that total approximately 3.9 ha. Using the 1987 federal manual, the Illinois Natural History Survey (Wilm and Machung 1996) delineated a 0.3-ha cattail marsh at the northwest corner of the site. This marsh is located in one of the farmed wetlands.

At the Rock Island location, the NWI (Milan Quadrangle) depicts on the east side a linear temporarily flooded, broad-leaved deciduous, forested palustrine wetland (PFO1A). The INHS delineated the southern portion of this wetland as jurisdictional (Keene, Admiraal and Harper 1997). The NRCS (1998) wetland map depicts a complex of prior converted land, farmed wetland and forested wetland in the vicinity of the proposed site.

Within the Green Rock site, the NWI depicts a linear wetland on the west side. It is classified as a temporarily flooded, broad-leaved deciduous, forested, palustrine wetland (PFO1A) (Coal Valley Quadrangle). The NRCS map also depicts this area and a narrow strip of woody vegetation (a hedge row) running north-south in the center of the site as wetland. Ninety-five percent of the site is prior converted land.

The INHS determined that the NWI wetland is not jurisdictional. The INHS also determined that the wetland depicted on the NRCS map is not a wetland based on the Army Corps of Engineers 1987 manual for delineating wetlands.

## B. Vegetation

Milan. This site was last farmed in 1996. In 1997, the site was planted to a cover crop of winter wheat and annual rye. The existing 0.3-ha wetland is dominated by cattail (*Typha angustifolia* and *T. latifolia*), beggars ticks (*Bidens* spp.) and spikerush (*Eleocharis* spp.) (Wilm and Machung 1996). The Floristic Quality Index is 10.6 and the mean C value is 3.2 (see Swink and Wilhelm 1994)

Rock Island. This area consists of a complex of cultivated ground and floodplain forest. The forest is dominated by boxelder (*Acer negundo*) silver maple (*Acer saccharinum*) and cottonwood (*Populus deltoides*) in the tree layer and boxelder, silver maple and sandbar willow (*Salix exigua*) in the sapling layer. Values for the mean-rated quality and floristic quality index are 2.5 and 16.8, respectively. These values indicate that a moderate to high degree of natural quality exists at this site.

Green Rock. This site is farmed. However, common, disturbance-tolerant hydrophytic species and agricultural weeds prevail. A list of 32 plant species was compiled (Wilm and Machung 1996). The mean C value is 2.2. The three species with the highest floristic quality index (FQI=5) are also obligate wetland plants; they include the following: long-leaved ammannia (*Ammannia coccinea*), creeping love grass (*Eragrostis hypnoides*) and false pimpernel (*Lindernia dubia*).

The floodplain forest bordering the east side of Mosquito Creek is dominated by boxelder and silver maples (*Acer negundo*, *A. saccharinum*).

### C. Soils

Milan. Sawmill silty clay loam, Coffeen silt loam and Wabash silty clay are mapped at this site (USDA 1977). Sawmill is poorly drained, Wabash silty clay is very poorly drained and Coffeen is somewhat poorly drained. Sawmill and Wabash are on the Rock Island hydric soils list. Hydric soils cover approximately 60 percent of the site (Attachment 3).

Rock Island. Otter silt loam, Orion silt loam and Coffeen silt loam are mapped at this site (USDA 1977). Otter soils are hydric. Orion and Coffeen are somewhat poorly drained and are not hydric (Attachment 3).

Green Rock. Sawmill silty clay loam, Radford silt loam, Plano silt loam and Elburn silt loam are mapped within the site (USDA 1977). Sawmill is poorly drained and is the only soil listed as hydric on the county list, Radford and Plano are somewhat poorly drained and listed as having hydric inclusions, and the well drained Plano silt loam is not listed. Hydric soil covers approximately 55 percent of the site.

### D. Hydrology and Topography

Milan. This site is located within the Rock River floodplain, but above the 100 year floodplain. The site is approximately 762 meters south of the river channel. Topography is level at 1 to 2 percent (Attachment 4).

Case Creek borders the east side of the site. The creek channel has been straightened and it is leveed on both sides. The bottom of the creek is approximately 1.7 meters (m) below that of the surrounding ground surface and approximately 5 m below the top of the levee. The Milan site has been effectively cut-off from any hydrologic effects from Case Creek.

An electric pump is located at the east side of the site. The pump drains surface water from the site into Case Creek. At the northeast corner there is a 76 cm culvert pipe that drains surface water from the site and a roadside ditch into Case Creek. No drain tiles were observed. This pump was turned off in 1997 in an effort to begin to restore the wetland hydrology to the site.

Rock Island. This site lies within the Rock River floodplain and is less than 0.4 Km north of the main channel. Topography is level, at 1 to 2 percent. Two perennial streams cross the site. The site and adjacent riverside property appear unleveed (Attachment 4).

Green Rock. This site is located in the Green River floodplain. Topography is level at 1 to 2 percent. Portions of the site are adjacent to the Green River. The site is 61 m southeast of the confluence of the Green and Rock Rivers. Mosquito Creek borders the west side of the site. The creek appears to have been straightened by excavation and the stream channel is incised approximately 2 m. This site lies within the 100-year floodplain and is not leveed (Attachment 5).

#### IV. Conceptual Plan

To economize on mitigation--per the rules to the Illinois Interagency Wetland Policy Act of 1989--individual wetland impacts greater than 0.2 hectares will be replaced if possible on-site and those less than 0.2 hectares will go off-site.

The IDOT proposes full credit (1:1) for restoration or creation of wetlands on prior converted farmland and partial credit for restoration of wetlands on farmed wetlands (0.75:1), preservation of existing wetlands (0.5:1) and buffer (0.25:1).

At Milan, the IDOT proposes to restore wetlands on approximately 3.94 ha of farmed wetlands and create them on 3.81 ha of prior converted ground. The existing 0.32 ha marsh would be preserved. The goal is to establish aquatic emergent species on about 3.24 ha (including the existing 0.32 ha marsh) and establish hydrophytic species of trees on the rest of the ground (about 4.83 ha). Approximately 6.92 ha of replacement wetlands would be provided at this location.

At Rock Island, the IDOT proposes to restore 1.96 ha of farmed wetlands to forested wetlands, create 1.65 ha forested wetlands from uplands and prior converted farmland, preserve 0.76 ha of forested wetlands, and plant 0.12 ha of forested buffer on uplands. Total area of replacement wetlands would be approximately 3.51 ha.

At the Green Rock site, 16.73 ha of wetlands would be restored (or created) on prior converted land to make up the balance of required mitigation, which would also be 16.73 ha of replacement wetlands.

##### A. Planting Plan

###### Trees

The Milan, Rock Island and Green Rock sites would be planted with 4.4-cm (1 3/4 in) caliper balled and burlapped or container grown trees. Trees would be at least 2 m in height. Approximately 272 trees per hectare would be planted and they would be set on 6 m centers. Tree species native to the Rock River floodplain are proposed for planting in the planned wetlands (Table 2).

Table 2. Species selection for planting in the wetland replacement sites. All are hydrophytic.

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pecan	( <i>Carya illinoensis</i> )
shellbark hickory	( <i>Carya laciniosa</i> )
swamp white oak	( <i>Quercus bicolor</i> )
pin oak	( <i>Quercus palustris</i> )
silver maple	( <i>Acer saccharinum</i> )
green ash	( <i>Fraxinus pennsylvanica</i> )
sycamore	( <i>Platanus occidentalis</i> )
cottonwood	( <i>Populus deltoides</i> )
black willow	( <i>Salix nigra</i> )

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### Aquatic Emergent Species

The Aquatic Emergent portion of the Milan Site is being allowed to re-vegetate naturally as the water table rises. If necessary herbaceous hydrophytic species can be hand seeded into bare areas.

### Site Preparation and Cover Crop

The Milan site has an established herbaceous cover and should be ready for tree planting. However, areas of tall growth (> 1.5 m) may have to be mowed. The Rock Island and Green Rock sites would be disked and herbicided as needed (depending on field conditions) and seeded to an herbaceous cover before the trees were planted. The cover would consist primarily of annual rye (*Secale cereale*), timothy (*Phleum pratense*) and red top (*Agrostis alba*).

### B. Grading Plan

The IDOT anticipates that only 15 to 30 centimeters (cm) of topsoil would need to be excavated at the Milan site in order to create wetlands. Only areas mapped as prior converted farmland would be excavated. On-site well-monitoring information collected by the ISGS will help to determine the depth of excavation necessary for creation of wetlands. It may be necessary to construct a drainage system outside of the mitigation site to drain the adjoining property.

At the Rock Island site wetlands would be created via shallow excavation. As a guideline, the depth of excavation would probably be to the ground surface elevation of existing farmed wetlands. At this time the IDOT is unaware of any need for placement of berms or water control structures. No open water wetlands are planned.

At Green Rock, the IDOT anticipates that little to no excavation would be needed to restore wetlands. Most of the site is prior converted wetland.



## V. Design Phase

Design plans that are prepared by a consultant or by the IDOT District office will be coordinated with the Bureau of Design and Environment Wetlands Unit at 50 and 100 percent completion. This coordination will give the Wetlands Unit the opportunity to review and comment on the plans and ensure compliance with the approved conceptual plan.

Within areas to be excavated, a finished grade of + or - 10 cm average across the site is acceptable. This range is made with the intent of minimizing the number of passes across the site and reducing soil compaction. The variability of finished grade will also create microhabitats and increase biodiversity.

Stockpiling and backfilling topsoil will not be necessary. The soils at all sites are thick and the substrates are suitable for plant growth.

## VI. Construction Phase

The IDOT plans to construct the Milan beltway extension using four contracts. Wetland mitigation work would be done within each of the four contracts (Table 3).

Table 3. Below is the proposed schedule for construction of the planned wetlands for the Milan beltway extension.

Contract No.	Site	Work to be accomplished
1	Milan	earthwork and site planting (tree planting)
2	Green Rock	earthwork and site planting of westernmost field
3	Green Rock	earthwork and site planting of easternmost field
4	Rock Island	earthwork, site planting, and restore temporarily filled wetlands

The District will notify the BDE Wetlands Unit of any proposed field changes to the grading or landscaping plans before they are implemented.

As-built grading and landscaping plans will be collected by the District and coordinated with the BDE Wetlands Unit and regulatory agencies. As-built grading plans will be topographic in form and the contour interval one foot. Landscaping will not begin until acceptance of the as-built grading plans.

The INHS and ISGS will monitor the wetland replacement sites during construction of the highway and during grading and landscaping of the wetlands.

## VII. Maintenance Phase

The IDOT anticipates that there will be no need for maintenance of the planted trees following the period of establishment.

The INHS and ISGS will conduct post-construction site-monitoring for five years. Each year the Surveys will monitor for attainment of established performance standards (see below) and will prepare a report that discusses the progress of the wetland. Monitoring will begin the first growing season following the period of establishment (see section 253.14 of the IDOT Standard Specifications for Road and Bridge Construction 1997).

### Performance Standards

The IDOT proposes the performance standards A and B listed below. Attainment of each over the five year monitoring period will indicate successful wetland replacement.

- A. Each planned wetland community should be a jurisdictional wetland as defined by current federal standards.
  - 1. Predominance of hydrophytic vegetation. More than 50% of the dominant plant species must be hydrophytic.
  - 2. Presence of hydric soils. Hydric soil characteristics should be present, or conditions favorable for hydric soil formation should persist at the site.
  - 3. Presence of wetland hydrology. The compensation area must be either permanently or periodically inundated at average depths less than 2 m (6.6 ft) or have soils that are saturated to the surface for at least 12.5% of the growing season.
- B. Each planned wetland community should meet standards for planted species survival and floristic composition.
  - 1. Planted species survivorship: At least 136 planted trees per hectare, should be established and living by the end of the five year monitoring period.
  - 2. Native species composition: At least 50% of the plants present should be non-weedy, native, perennial species.
  - 3. Dominant plant species: None of the three most dominant plant species may be non-native or weedy species, such as cattails, sandbar willow, or reed canary grass.

## VIII. References

- Illinois Department of Transportation. 1995. Draft wetlands procedures. Bureau of Design and Environment procedure memorandum. 26 pp.
- Illinois Department of Transportation. 1991. Wetland study--technical report: FAU Route 5822, Section 1-3, Milan Beltway Extension, Rock Island County, P92-096-84.
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- U.S. Department of Agriculture. 1977. Soil Survey of Rock Island County, Illinois: Soil Conservation Service, Washington, D.C., 140 pp., 76 maps.
- U.S. Corps of Engineers. 1995. Federal guidance for the establishment, use and operation of mitigation banks. Federal Register, Vol. 60, No. 228. pp. 58605-58614.
- U.S. Environmental Protection Agency. 1991. Generic mitigation banking program under section 404. U.S. Environmental Protection Agency, Region 5. unpublished report. 7 pp.

## IX. Attachments